

FIG-1
PRIOR ART

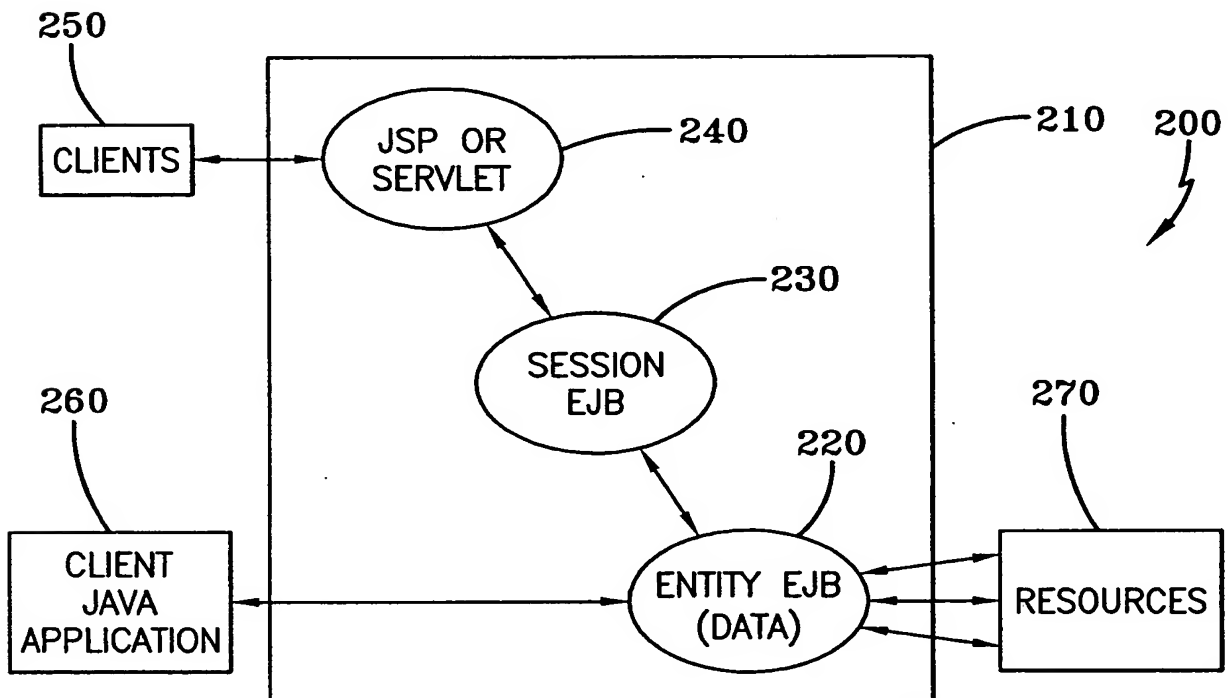


FIG-2
PRIOR ART

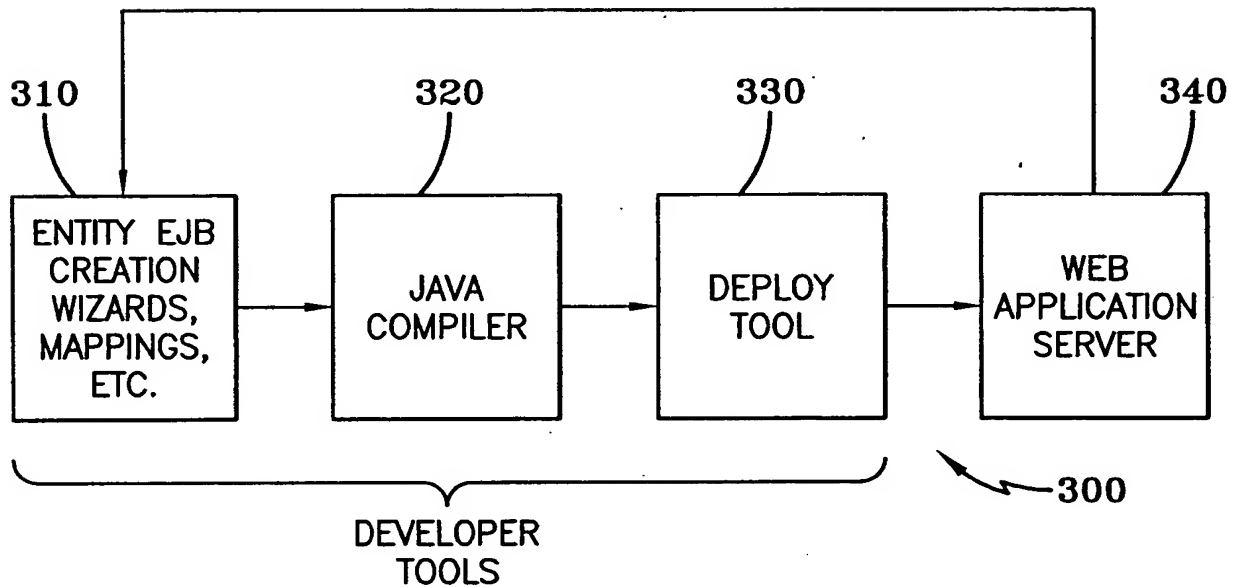


FIG-3
PRIOR ART

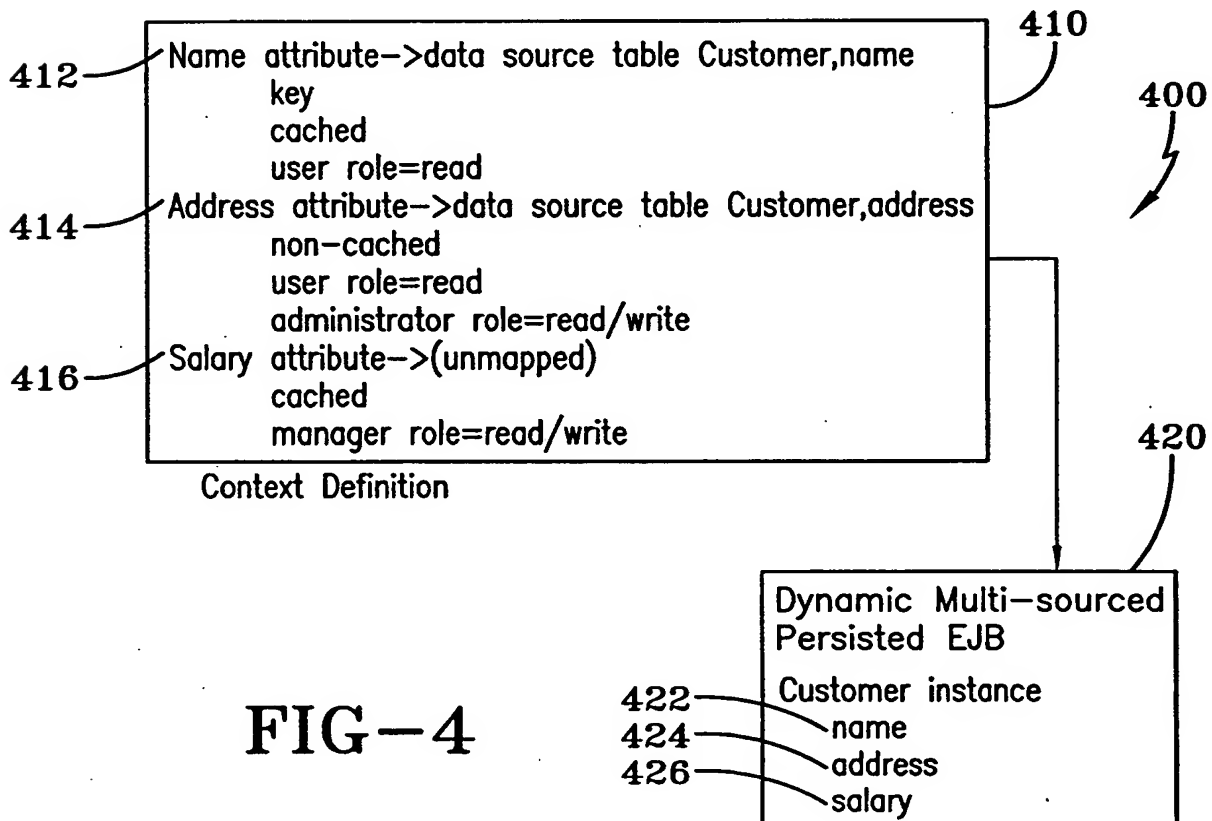


FIG-4

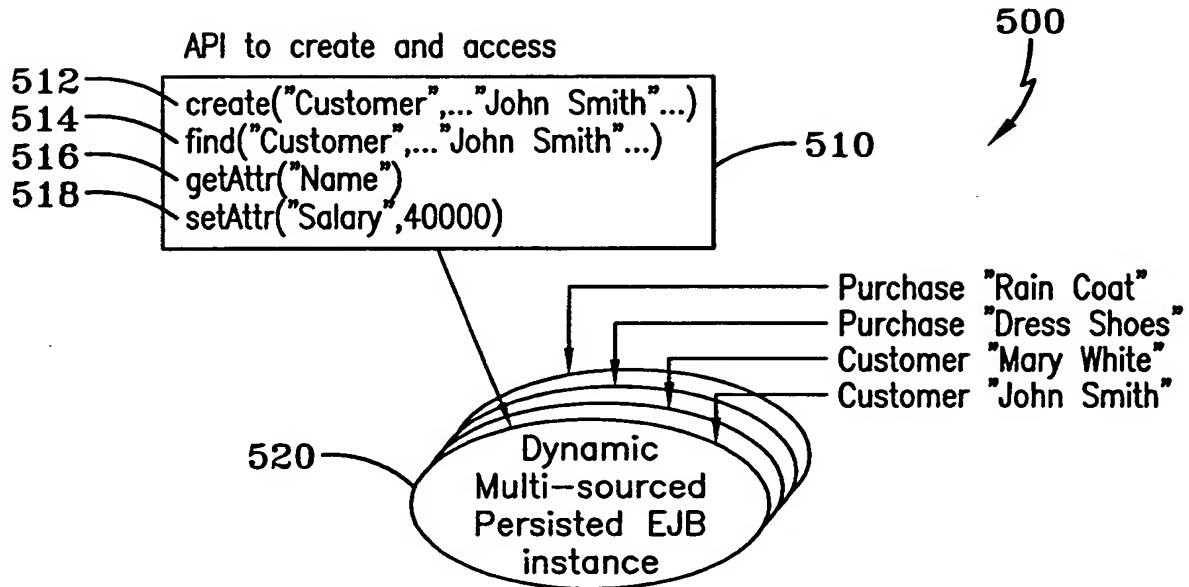


FIG-5

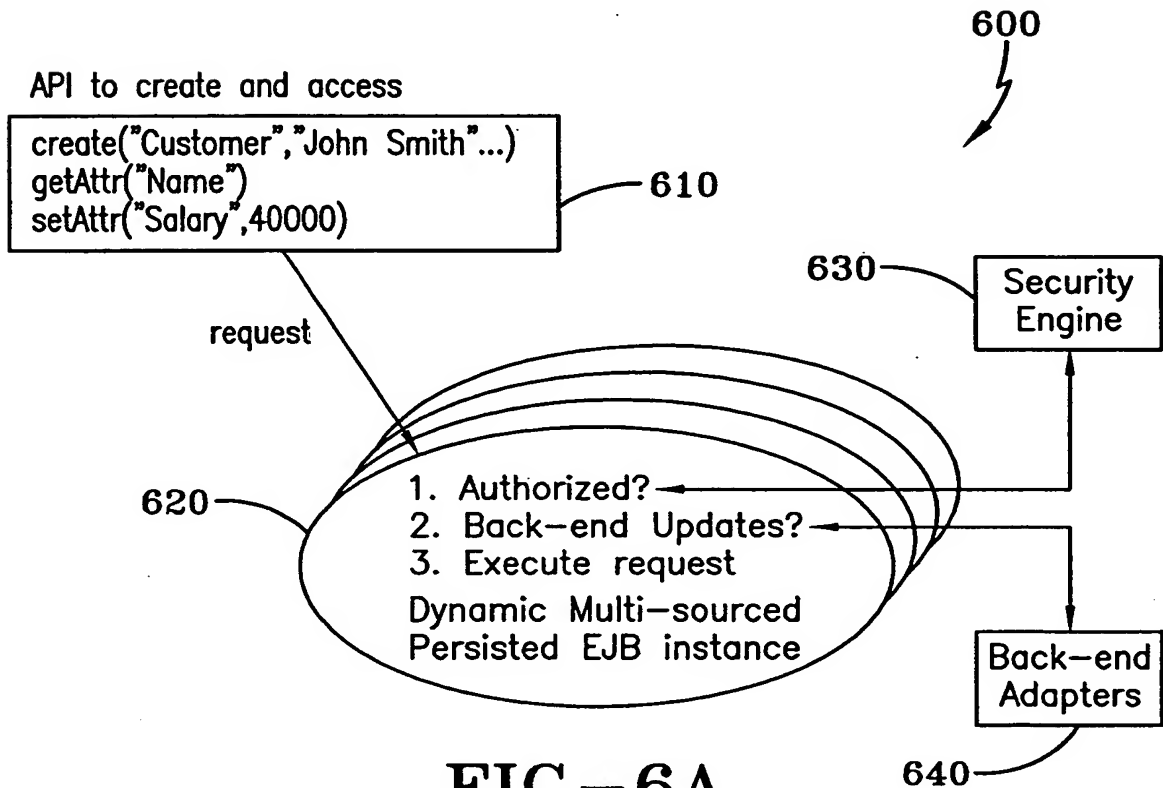


FIG-6A

When a SessionBean invokes the getAttr() method on the ContextBean, the ContextBean code is as follows:

```

public Object getAttr(String attrName) throws ContextException
{
...
    try {
        ...
        // If client not authorized to read attribute's throw exception.
        if ( !canAccessAttribute(attrName, true) ) {
            ...
            throw new CannotReadAttributeException(...);
        }
        // If cached attribute and we have latest value then return it.
        if (attrTuple.isCacheable) {
            if (attrTuple.isCached) {
                return attrTuple.value;
            }
        }
        // Else go to backend to get value for this attribute.
        // Add it to the cache and return it to the caller.
        // Walk the tree to make sure all dependents are cached
        ...
        while ( tuple.keyName != null ) {
            keyTuple = lookupAttr( tuple.keyName );
            if ( !keyTuple.isCached )
                keysAndAttrs.addElement( keyTuple.name );
            tuple = keyTuple;
        }
        ...
        getFromBackend( keysAndAttrs.toArray() );
        if ( attrTuple.isDirty )
            return attrTuple.value;
        else
            throw new ContextException(...);
    }
    ...
}

```

FIG-6B

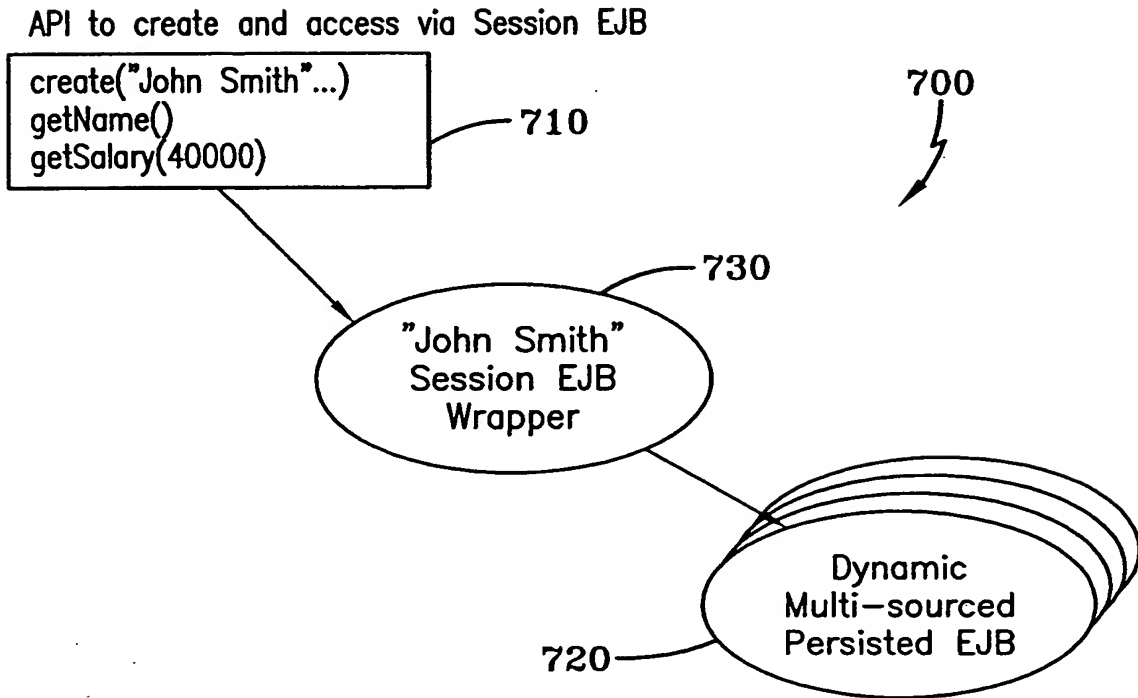


FIG-7A

Shown below is sample session bean code and how it would invoke methods on the Dynamic Entity EJB:

```

public class CustomerBean implements SessionBean, CustomerIfc
{
    ...
    public String getFirstName(ContextKey contextKey)
    {
        ...
        com.journee.context.Context context = getContext(contextKey);
        return (String)context.getAttr("firstName");
    }
}
  
```

FIG-7B

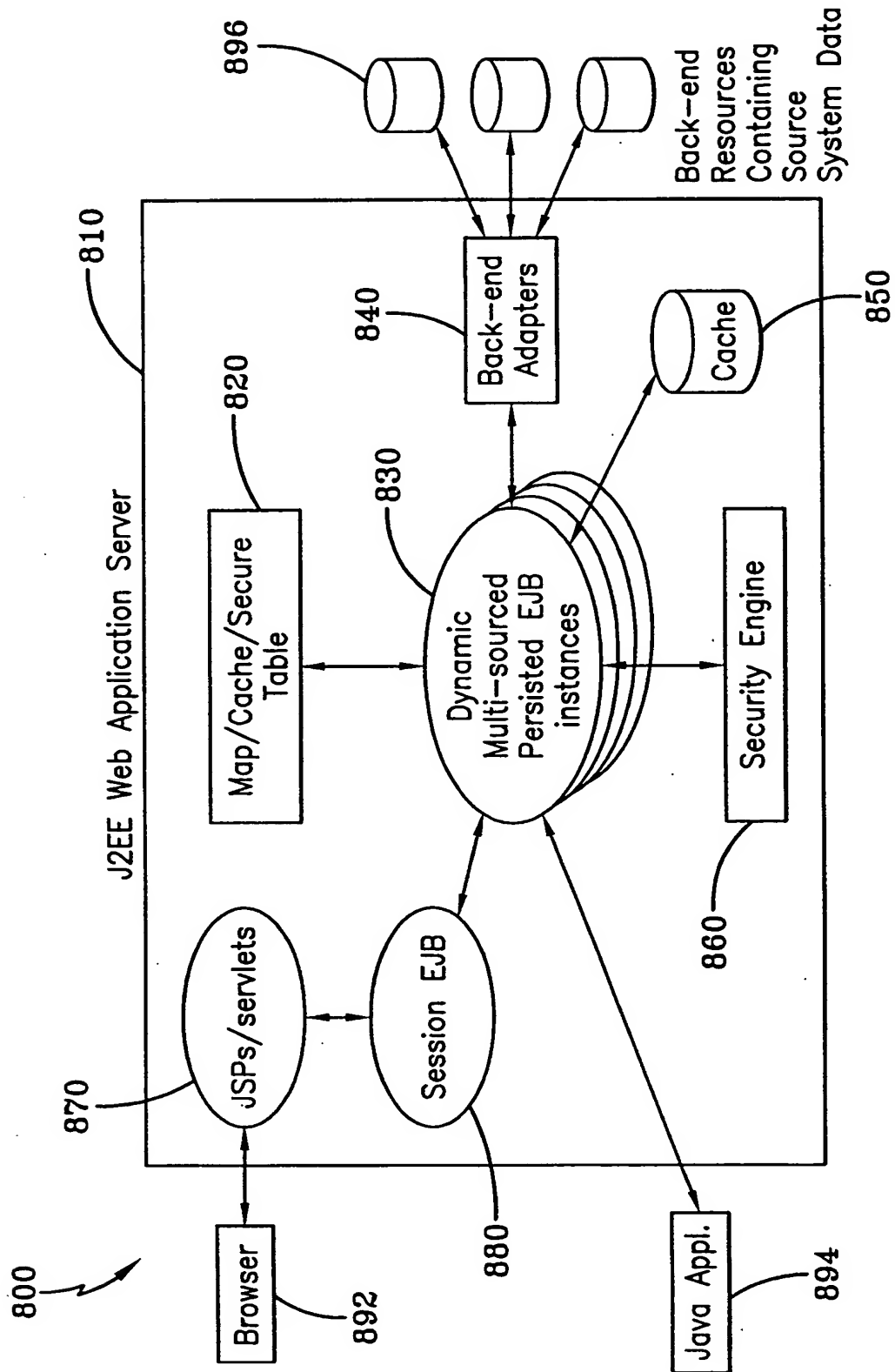


FIG-8

```

<?xml version="1.0" encoding="UTF-8"?>
<!DOCTYPE context SYSTEM "..\ContextType.dtd">
<context name="Customer">
  <adapterconfig name="Customer" initialpoolsize="0" maxpoolsize="0">
    <key attribute="id"/>
    <key attribute="billing.id"/>
    <key attribute="billing.day.id"/>
    <key attribute="billing.evening.id"/>
    <key attribute="shipping.id"/>
    <key attribute="shipping.day.id"/>
    <key attribute="shipping.evening.id"/>
  </adapterconfig>
  <attribute name="id" type="java.lang.Integer" cacheable="Y">
    <adapter name="Customer" field="id"/>
    <role name="Everyone" security="RW"/>
  </attribute>
  .
  .
  .
  <attribute name="netWorth" type="java.lang.Double" cacheable="N">
    <adapter name="Customer" field="net_worth"/>
    <role name="Everyone" security="RW"/>
  </attribute>
  <structure name="billing">
    <attribute name="id" type="java.lang.Integer" cacheable="Y">
      <adapter name="Customer" field="billing_address$id"/>
      <role name="Everyone" security="RW"/>
    </attribute>
    .
    .
    .
    <attribute name="zip" type="java.lang.String" cacheable="Y">
      <adapter name="Customer" field="billing_address$zip"/>
      <role name="Everyone" security="RW"/>
    </attribute>
    <structure name="day">
      <attribute name="id" type="java.lang.Integer" cacheable="Y">

```

TO FIG-9B

FIG-9A

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FROM FIG-9A

```
        <adapter name="Customer"
field="billing_address$day_phone$id"/>
        <role name="Everyone" security="RW"/>
    </attribute>
    .
    .
    <attribute name="suffix" type="java.lang.String" cacheable="Y">
        <adapter name="Customer"
field="billing_address$day_phone$suffix"/>
        <role name="Everyone" security="RW"/>
    </attribute>
</structure>
<structure name="evening">
    <attribute name="id" type="java.lang.Integer" cacheable="Y">
        <adapter name="Customer"
field="billing_address$evening_phone$id"/>
        <role name="Everyone" security="RW"/>
    </attribute>
    .
    .
    <attribute name="suffix" type="java.lang.String" cacheable="Y">
        <adapter name="Customer"
field="billing_address$evening_phone$suffix"/>
        <role name="Everyone" security="RW"/>
    </attribute>
</structure>
</structure>
<structure name="shipping">
    <attribute name="id" type="java.lang.Integer" cacheable="Y">
        <adapter name="Customer" field="shipping_address$id"/>
        <role name="Everyone" security="RW"/>
    </attribute>
    .
    .
    .
```

TO FIG-9C

FIG-9B

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FROM FIG-9B

```
<attribute name="zip" type="java.lang.String" cacheable="Y">
  <adapter name="Customer" field="shipping_address$zip"/>
  <role name="Everyone" security="RW"/>
</attribute>
<structure name="day">
  <attribute name="id" type="java.lang.Integer" cacheable="Y">
    <adapter name="Customer"
field="shipping_address$day_phone$id"/>
    <role name="Everyone" security="RW"/>
  </attribute>
  .
  .
  .
  <attribute name="suffix" type="java.lang.String" cacheable="Y">
    <adapter name="Customer"
field="shipping_address$day_phone$suffix"/>
    <role name="Everyone" security="RW"/>
  </attribute>
</structure>
<structure name="evening">
  <attribute name="id" type="java.lang.Integer" cacheable="Y">
    <adapter name="Customer"
field="shipping_address$evening_phone$id"/>
    <role name="Everyone" security="RW"/>
  </attribute>
  .
  .
  .
  <attribute name="suffix" type="java.lang.String" cacheable="Y">
    <adapter name="Customer"
field="shipping_address$evening_phone$suffix"/>
    <role name="Everyone" security="RW"/>
  </attribute>
</structure>
</structure>
</context>
```

FIG-9C

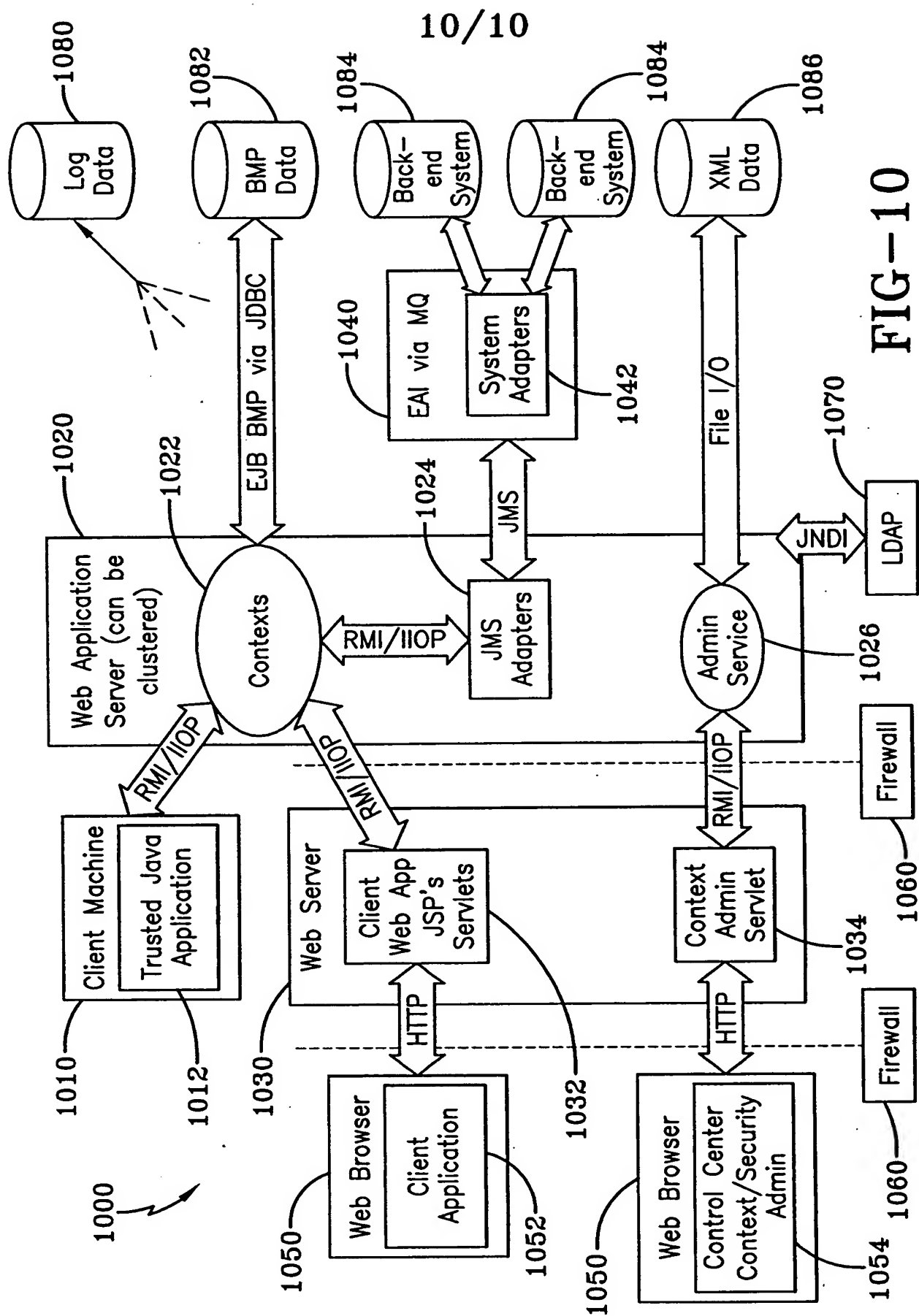


FIG-10